Subject: Small horns
Posted by Phorize on Tue, 23 Jun 2020 14:58:28 GMT
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Apologies for what may seem like a question that is only tangentially related to pi speakers. I'm interested in whether Wayne has experimented with smaller corner horn designs than the current range, and what the results were. I'm on the verge of doing some pi 4s for a small room but have been considering the constraints on smaller horn enclosures. Obviously the woofer, wave guide and enclosure need to be large to deliver good performance across the full frequency range, but I'm wondering if it's practically possible to produce a corner horn going down to say 50-60 hz with a small enclosure, and if so why Wayne doesn't do it.

Subject: Re: Small horns
Posted by Wayne Parham on Tue, 23 Jun 2020 16:25:31 GMT
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I did make a five Pi model for a while that was pretty small. And I even made a cornerhorn with an 8" woofer, which was even smaller than the five Pi model.

There's no harm in making a constant directivity corenerhorn that is small. The expansion from the apex of the corner is really what's doing all the work anyway. But there are various things to consider.

There are two main things I've wrestled with when making small cornerhorns:

1. Bass response is lacking. I don't like low-efficiency speakers, so I don't consider that option and without it, a small speaker must necessarily lack bass. That's not a cornerhorn issue per se, but it is a potential problem nonetheless.

2. Midrange loading is difficult in a small box too. I've experimented with various ways to generate and radiate midrange, and the trade-offs usually involve the acoustic distance to the walls. One can try to get the midrange radiator close to the corner apex, but that's usually only possible at the lower end of the band. One can accept the walls becoming a reflector at the upper end, but that tends to create ripples in response. Or one can provide a horn/waveguide that directs sound at the upper end, so that the walls are only confining the radiation down low where they are acoustically close. But this tends to make the overall package larger, so even if the bass bin is small, the midhorn is fairly large.

Subject: Re: Small horns
Posted by Phorize on Tue, 23 Jun 2020 16:36:46 GMT
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Thanks for your reply Wayne, that's very interesting. Out of interest are the 5 pi plans still

available, I'd be interested to see them. There's a real shortage of well engineered smaller designs out there, at least as far as I can see.

Subject: Re: Small horns
Posted by Wayne Parham on Tue, 23 Jun 2020 17:07:07 GMT
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Sorry, but no, the small cornerhorn plans aren't available 'cause they used drivers that are no longer available. An example is the JBL 2115. It was an awesome little 8" driver, but it really didn't fit in the JBL professional series line because it handled so little power. It was more like an 8" Fostex driver, and in fact, I think Fostex eventually copied it or at least made a driver very much like it, their F200A. I think it has been discontinued now too.

The current eight Pi model is what I make to fill the price/performance point where the five Pi model used to be. It's an entry level cornerhorn with a 10" woofer, which is what the five Pi model was. I changed the model name because it is somewhat different, having a mid horn that is reflex loaded, sort of like a miniature version of the Altec Voice of the Theater.
